

**AMENDMENTS TO THE CLAIMS**

**Please amend claims 1, 3, 4, 8, 11, 14 and 17 as follows:**

1. **(Currently Amended)**. A method for gray level dynamic switching, applied to a display with a pixel, comprising the following steps:

providing a gray level sequence SG, wherein SG sequentially represents two or more desired gray levels  $G_o(1)G_o(1), \dots, G_o(T)G_o(T)$  of the pixel at consecutive time frames 1, ..., T and comprises a current gray level  $G_o(t)G_o(t)$  and a previous gray level  $G_o(t-1)G_o(t-1)$  corresponding to time frames t and t-1, respectively, and  $G_o(t)G_o(t)$  corresponds to a driving voltage  $V_o(t)V_o(t)$  to present  $G_o(t)G_o(t)$  under a static condition; and

determining an optimized driving voltage  $V_d(t)V_d(t)$ , according to an equation  $V_d(t) = V_o(t-1) + ODV$ , wherein the ODV is a minimum voltage capable of obtaining one gray level transition in a determined response time;

determining ~~an~~ a dynamic gray level data  $G_d(t)$  according to an equation

$$\begin{aligned} V_d(t) &= a \times G_d(t)^3 + b \times G_d(t)^2 + c \times G_d(t) + d \\ V_d(t) &= a \times G_d(t)^3 + b \times G_d(t)^2 + c \times G_d(t) + d ; \end{aligned}$$

producing the optimized driving voltage  $V_d(t)V_d(t)$  according to the dynamic gray level data  $G_d(t)$ ;

driving the pixel with the optimized driving voltage  $V_d(t)V_d(t)$  to change the pixel forward ~~pixel~~ to a state corresponding to  $G_o(t)$ .

2. **(Original)**. The method as claimed in claim 1, wherein a is -0.0004, b is 0.0037, c is -0.1443, and d is 8.6992.

3. **(Currently Amended).** The method as claimed in claim 1, wherein, in positive frame, the polarity of the voltage ODV is positive when  $G_o(n)G_o(t) > G_o(n-1)G_o(t-1)$  and negative when  $G_o(n)G_o(t) < G_o(n-1)G_o(t-1)$ .
4. **(Currently Amended).** The method as claimed in claim 1, wherein, in negative frame, the polarity of the voltage ODV is negative when  $G_o(n)G_o(t) > G_o(n-1)G_o(t-1)$  and positive when  $G_o(n)G_o(t) < G_o(n-1)G_o(t-1)$ .
5. **(Original).** The method as claimed in claim 1, wherein the display is a liquid crystal display.
6. **(Original).** The method as claimed in claim 1, further comprising a step of adjusting the voltage ODV according to an operating temperature.
7. **(Original).** The method as claimed in claim 6, wherein the voltage ODV is inversely proportional to the operating temperature.
8. **(Currently Amended).** An apparatus for gray level dynamic switching, applied to drive a display with a pixel, comprising:
  - a memory set for storing a previous gray level  $G_o(t-1)$ ,  $G_o(t-1)$  representing the desired gray level of the pixel at time frame t-1, and  $G_o(t-1)$  corresponding to a driving voltage  $V_o(t-1)$  to present  $G_o(t-1)$  under a static condition;
  - a processor for determining an optimized driving voltage  $V_d(t)$  according to a current gray level  $G_o(t)$  and an equation  $V_d(t) = V_o(t-1) + ODV$ , and determining an a dynamic

gray level data  $G_d(t)$  according to an equation

$$\cancel{V_d(t) = a \times G_d(t)^3 + b \times G_d(t)^2 + c \times G_d(t) + d}$$

$V_d(t) = a \times G_d(t)^3 + b \times G_d(t)^2 + c \times G_d(t) + d$ , wherein  ~~$G_o(t)$~~  $G_o(t)$  represents the

desired level of the pixel at time frame t, the voltage ODV is a minimum voltage capable of obtaining one gray level transition in a determined response time, a is -0.0004, b is 0.0037, c is -0.1443, and d is 8.6992; and

a driving circuit for receiving  $G_d(t)$  and correspondingly generating the optimized driving voltage  ~~$V_d(t)$~~  $V_d(t)$  to drive the pixel to change the pixel forward ~~pixel~~ to a current state corresponding to  $G_o(t)$ .

9. **(Original)**. The apparatus as claimed in claim 8, wherein, in positive frame, the polarity of the voltage ODV is positive when  $G_o(t) > G_o(t-1)$  and negative when  $G_o(t) < G_o(t-1)$ .

10. **(Original)**. The apparatus as claimed in claim 8, wherein, in negative frame, the polarity of the voltage ODV is negative when  $G_o(t) > G_o(t-1)$  and positive when  $G_o(t) < G_o(t-1)$ .

11. **(Currently Amended)**. The apparatus as claimed in claim 8, wherein the processor further adjusts  ~~$G_d(t)$~~ the voltage ODV according to an operating temperature.

12. **(Original)**. The apparatus as claimed in claim 11, wherein the voltage ODV is inversely proportional to the operating temperature.

13. **(Original)**. The apparatus as claimed in claim 8, wherein the memory set is a set of dynamic random access memories (DRAM).

14. **(Currently Amended)**. A display system, comprising:

a display, having at least one pixel;

a memory for storing a program;

a processor for executing, according to a program in the memory, the following steps:

receiving an original gray level sequence  $S_o$  consisting of two or more original gray levels  $G_o(1), \dots, G_o(T)$ , wherein a current gray level  $G_o(t)$  and a previous gray level  $G_o(t-1)$  correspond to time frames  $t$  and  $t-1$ , respectively, and  $G_o(t-1)$  corresponds to a driving voltage  $V_o(t-1)$  to present  $G_o(t-1)$  under a static condition;

transforming  $S_o$  to an adjusted gray level sequence  $S_d$  consisting of two or more adjusted gray levels  $G_d(1), \dots, G_d(M)$ , an adjusted gray level  $G_d(m)$  being generated according to a relevant sub-sequence comprising  $G_o(t-1)$  and  $G_o(t)$ , wherein an optimized driving voltage  ~~$V_d(t)$~~   $V_d(t)$  is determined according to the  $G_o(t)$  and an equation  ~~$V_d(t) = V_o(t-1) + ODV$~~   $V_d(t) = V_o(t-1) + ODV$ , and the adjusted gray level  $G_d(m)$  is determined according to an equation  ~~$V_d(t) = a \times G_d(m)^3 + b \times G_d(m)^2 + c \times G_d(m) + d$~~   $V_d(t) = a \times G_d(m)^3 + b \times G_d(m)^2 + c \times G_d(m) + d$ , wherein the voltage ODV is a minimum voltage capable of obtaining one gray level transition in a determined response time,  $a$  is -0.0004,  $b$  is 0.0037,  $c$  is -0.1443, and  $d$  is 8.6992; and

sequentially driving the pixel with driving forces corresponding to  $G_d(1), \dots, G_d(M)$  in  $S_d$ .

15. **(Original)**. The system as claimed in claim 14, wherein, in positive frame, the polarity of the voltage ODV is positive when  $G_o(t) > G_o(t-1)$  and negative when  $G_o(t) < G_o(t-1)$ .

16. **(Original)**. The system as claimed in claim 14, wherein, in negative frame, the polarity of the voltage ODV is negative when  $G_o(t) > G_o(t-1)$  and positive when  $G_o(t) < G_o(t-1)$ .

17. **(Currently Amended)**. The system as claimed in claim 14, wherein the program in the memory adjusts the ~~Gd(t)~~voltage ODV according to an operating temperature.

18. **(Original)**. The system as claimed in claim 17, wherein the voltage ODV is inversely proportional to the operating temperature.